In the Claims

1. (Currently Amended) ~~Nucleic~~ A nucleic acid sequence encoding a 9 kD *Mycobacterium avium* subspecies *paratuberculosis* protein ~~or a part of said nucleic acid sequence that encodes an immunogenic fragment of said protein, said nucleic acid sequence or said part thereof having at least 85%, preferably 90 %, more preferably 95 % homology with the nucleic acid sequence of the *Mycobacterium avium* subspecies *paratuberculosis* protein~~ gene as depicted in SEQ ID NO: 5.

2. (Currently Amended) ~~Nucleic~~ A nucleic acid sequence encoding a 14 kD *Mycobacterium avium* subspecies *paratuberculosis* protein ~~or a part of said nucleic acid sequence that encodes an immunogenic fragment of said protein, said nucleic acid sequence or said part thereof having at least 85%, preferably 90 %, more preferably 95 % homology with the nucleic acid sequence of the *Mycobacterium avium* subspecies *paratuberculosis* protein~~ gene as depicted in SEQ ID NO: 3.

3. (Currently Amended) ~~Nucleic~~ A nucleic acid sequence encoding a 28 kD *Mycobacterium avium* subspecies *paratuberculosis* protein ~~or a part of said nucleic acid sequence that encodes an immunogenic fragment of said protein, said nucleic acid sequence or said part thereof having at least 85%, preferably 90 %, more preferably 95~~

~~% homology with the nucleic acid sequence of the *Mycobacterium avium* 20 subspecies *paratuberculosis* protein~~ gene as depicted in SEQ ID NO: 1.

4. (Currently Amended) ~~Nucleic~~ A nucleic acid sequence encoding a 47 kD *Mycobacterium avium* subspecies *paratuberculosis* protein ~~or a part of said nucleic acid sequence that encodes an immunogenic fragment of said protein, said nucleic acid sequence or said part thereof having at least 85%, preferably 90 %, more preferably 95 % homology with the nucleic acid sequence of the *Mycobacterium avium* subspecies *paratuberculosis* protein~~ gene as depicted in SEQ ID NO: 7.

5. (Currently Amended) ~~Nucleic~~ A nucleic acid sequence encoding a *Mycobacterium avium* subspecies *paratuberculosis* protein ~~or a part of said nucleic acid sequence that encodes an immunogenic fragment of said protein, said nucleic acid sequence or said part thereof having at least 85%, preferably 90 A, more preferably 95 % homology with the nucleic acid sequence of the *Mycobacterium avium* subspecies *paratuberculosis* protein~~ gene as depicted in SEQ ID NO: 9.

6. (Currently Amended) ~~Nucleic~~ A nucleic acid sequence encoding a *Mycobacterium avium* subspecies *paratuberculosis* protein ~~or a part~~

~~of said nucleic acid sequence that encodes an immunogenic fragment of said protein, said nucleic acid sequence or said part thereof having at least 85%, preferably 90 %, more preferably 95 % homology with the nucleic acid sequence of the *Mycobacterium avium* subspecies *paratuberculosis* protein~~ gene as depicted in SEQ ID NO: 11.

7. (Currently Amended) ~~Nucleic~~ A nucleic acid sequence encoding a *Mycobacterium avium* subspecies *paratuberculosis* protein ~~or a part of said nucleic acid sequence that encodes an immunogenic fragment of said protein, said nucleic acid sequence or said part thereof having at least 85%, preferably 90 %, more preferably 95 % homology with the nucleic acid sequence of the *Mycobacterium avium* subspecies *paratuberculosis* protein~~ gene as depicted in SEQ ID NO: 13.

8. (Currently Amended) ~~Nucleic~~ A nucleic acid sequence encoding a *Mycobacterium avium* subspecies *paratuberculosis* protein ~~or a part of said nucleic acid sequence that encodes an immunogenic fragment of said protein, said nucleic acid sequence or said part thereof having at least 85%, preferably 90 %, more preferably 95 % homology with the nucleic acid sequence of the *Mycobacterium avium* subspecies *paratuberculosis* protein~~ gene as depicted in SEQ ID NO: 15.

9. (Currently Amended) ~~Nucleic~~ A nucleic acid sequence encoding a *Mycobacterium avium* subspecies *paratuberculosis* protein ~~or a part of said nucleic acid sequence that encodes an immunogenic fragment of said protein, said nucleic acid sequence or said part thereof having at least 85%, preferably 90 %, more preferably 95 % homology with the nucleic acid sequence of the *Mycobacterium avium* subspecies *paratuberculosis* protein~~ gene as depicted in SEQ ID NO: 17.

10. (Currently Amended) ~~Nucleic~~ A nucleic acid sequence encoding a 60 kD *Mycobacterium avium* subspecies *paratuberculosis* protein having a pI of 5.60-6.15 ~~or a part of said nucleic acid sequence that encodes an immunogenic fragment of said protein~~.

11. (Currently Amended) ~~Nucleic~~ A nucleic acid sequence encoding a 33 kD *Mycobacterium avium* subspecies *paratuberculosis* protein having a pI of 4.20-4.75 ~~or a part of said nucleic acid sequence that encodes an immunogenic fragment of said protein~~.

12. (Currently Amended) A DNA fragment comprising a nucleic acid sequence according to claim ~~1-11~~ 1.

13. (Currently Amended) A recombinant ~~Recombinant~~ DNA molecule,

comprising:

a nucleic acid sequence according to claim 1 ~~1-11 or a DNA fragment according to claim 12,~~ under the control of a functionally linked promoter.

14. (Currently Amended) A live ~~Live~~ recombinant carrier, comprising:

a nucleic acid sequence according to claim 1 ~~1-11, a DNA fragment according to claim 12 or a recombinant DNA molecule according to claim 13~~.

15. (Currently Amended) A host ~~Host~~ cell, comprising:

a nucleic acid sequence according to claim 1 ~~1-11, a DNA fragment according to claim 12, a recombinant DNA molecule according to claim 13 or a live recombinant carrier according to claim 14~~.

16. (Currently Amended) A 9 kD *Mycobacterium avium* subspecies *paratuberculosis* protein or an immunogenic fragment of said protein, ~~characterized in that~~ wherein said protein or immunogenic fragment thereof has a sequence homology of at least 90%~~, preferably 92 %, more preferably 94 % to~~ having the amino acid sequence as depicted in SEQ ID NO: 6.

17. (Currently Amended) A 14 kD *Mycobacterium avium* subspecies *paratuberculosis* protein ~~or an immunogenic fragment of said protein, characterized in that~~ wherein ~~said protein or immunogenic fragment thereof has a sequence homology of at least 90%, preferably 92 %, more preferably 94 % to~~ having the amino acid sequence as depicted in SEQ ID NO: 4.

18. (Currently Amended) A 28 kD *Mycobacterium avium* subspecies *paratuberculosis* protein ~~or an immunogenic fragment of said protein, characterized in that~~ wherein ~~said protein or immunogenic fragment thereof has a sequence homology of at least 90%, preferably 92 %, more preferably 94 % to~~ having the amino acid sequence as depicted in SEQ ID NO: 2.

19. (Currently Amended) A 47 kD *Mycobacterium avium* subspecies *paratuberculosis* protein ~~or an immunogenic fragment of said protein, characterized in that~~ wherein ~~said protein or immunogenic fragment thereof has a sequence homology of at least 90%, preferably 92 %, more preferably 94 % to~~ having the amino acid sequence as depicted in SEQ ID NO: 8.

20. (Currently Amended) A *Mycobacterium avium* subspecies *paratuberculosis* protein ~~or an immunogenic fragment of said protein, characterized in that~~ wherein ~~said protein or~~

~~immunogenic fragment thereof has a sequence homology of at least 90%, preferably 92 %, more preferably 94 % to~~ having the amino acid sequence as depicted in SEQ ID NO: 10.

21. (Currently Amended) A *Mycobacterium avium* subspecies *paratuberculosis* protein ~~or an immunogenic fragment of said protein, characterized in that~~ wherein said protein ~~or immunogenic fragment thereof has a sequence homology of at least 90%, preferably 92 %, more preferably 94 % to~~ having the amino acid sequenceas depicted in SEQ ID NO: 12.

22. (Currently Amended) A *Mycobacterium avium* subspecies *paratuberculosis* protein ~~or an immunogenic fragment of said protein, characterized in that~~ wherein said protein ~~or immunogenic fragment thereof has a sequence homology of at least 90%, preferably 92 %, more preferably 94 % to~~ having the amino acid sequence as depicted in SEQ ID NO: 14.

23. (Currently Amended) A *Mycobacterium avium* subspecies *paratuberculosis* protein ~~or an immunogenic fragment of said protein, characterized in that~~ wherein said protein ~~or immunogenic fragment thereof has a sequence homology of at least 90%, preferably 92 %, more preferably 94 % to~~ having the amino acid sequence as depicted in SEQ ID NO: 16.

24. (Currently Amended) A *Mycobacterium avium* subspecies *paratuberculosis* protein ~~or an immunogenic fragment of said protein, characterized in that~~ wherein said protein ~~or immunogenic fragment thereof has a sequence homology of at least 90%, preferably 92 %, more preferably 94 % to~~ having the amino acid sequence as depicted in SEQ ID NO: 18.

25. (Currently Amended) A *Mycobacterium avium* subspecies *paratuberculosis* 60 kD protein having a pI of 5.60-6.15 ~~or an immunogenic fragment of said protein~~.

26. (Currently Amended) A *Mycobacterium avium* subspecies *paratuberculosis* 33 kD protein having a pI of 4.20-4.75 ~~or an immunogenic fragment of said protein~~.

27. (Canceled)

28. (Canceled)

29. (Canceled)

30. (Currently Amended) ~~Vaccine~~ A vaccine for combating *Mycobacterium avium* subspecies *paratuberculosis* infection, ~~characterized in that said vaccine comprises~~ comprising:

at least one *Mycobacterium avium* subspecies *paratuberculosis* protein according to ~~claims 16-26~~ claim 16 ~~or an immunogenic fragment of said protein~~ and

a pharmaceutically acceptable carrier.

31. (Currently Amended) ~~Vaccine~~ A vaccine for combating *Mycobacterium avium* subspecies *paratuberculosis* infection, ~~characterized in that said vaccine comprises~~ comprising:

a nucleic acid sequence according to claim 1 ~~claims 1-11, a DNA fragment according to claim 12, a recombinant DNA molecule according to claim 13, a live recombinant carrier according to claim 14 or a host cell according to claim 15~~ and

a pharmaceutically acceptable carrier.

32. (Currently Amended) ~~Vaccine~~ A vaccine for combating *Mycobacterium avium* subspecies *paratuberculosis* infection, comprising: ~~characterized in that said vaccine comprises~~

antibodies against a protein according to ~~claims 16-26~~ claim 16 ~~or an immunogenic fragment of said protein~~ and

a pharmaceutically acceptable carrier.

33. (Currently Amended) ~~Vaccine~~ The vaccine according to ~~claims 30-32~~ claim 30, ~~characterized in that said vaccine~~ further comprising an adjuvant.

34) (Currently Amended) ~~Vaccine~~ The vaccine according to ~~claims 30-33~~ claim 30, ~~characterized in that said vaccine comprises~~ further comprising an additional antigen derived from a ~~virus or micro organism pathogenic to~~ cattle pathogen, an antibody against said antigen or genetic information encoding said antigen.

35. (Currently Amended) ~~Vaccine~~ The vaccine according to claim 34, ~~characterized in that~~ wherein said ~~virus or micro organism pathogenic to~~ cattle pathogen is selected from the group consisting of Bovine Herpesvirus, bovine Viral Diarrhoea virus, Parainfluenza type 3 virus, Bovine Paramyxovirus, Foot and Mouth Disease virus, *Pasteurella haemolytica*, Bovine Respiratory Syncytial Virus, *Theileria sp.*, *Babesia sp.*, *Trypanosoma species*, *Anaplasma sp.*, *Neospora caninum*, *Staphylococcus aureus*, *Streptococcus agalactiae*, Mycoplasma, *E. coli*, *Enterobacter*, *Klebsiella*, *Citrobacter* and *Streptococcus dysgalactiae*.

36. (Currently Amended) ~~Method~~ A method for the preparation of a vaccine according to ~~claims 30-35~~ claim 30, ~~said method~~ comprising:

~~the~~ admixing ~~of~~ a nucleic acid sequence according to claim 1 ~~claims 1-11, a DNA fragment according to claim 12, a recombinant DNA molecule according to claim 13, a live recombinant carrier according to claim 14, a host cell according to claim 15, a~~

~~protein according to claims 16-26 or antibodies against a protein according to claims 16-26~~, and

a pharmaceutically acceptable carrier.

37. (Currently Amended) A diagnostic kit, comprising:

suitable detection means and

a nucleic acid sequence according to claim 1 ~~claims 1-11~~ or a primer thereof~~, a protein according to claims 16-26 or an immunogenic fragment thereof, or antibodies that are reactive with a protein according to claims 16-26~~.